

Work Order ID 127805

December-17-14 1:55:21 PM

646.3013
B127805
REV. N/C

127805

Page 1

Item ID: 646.3013

Accept

N9000040100

Setup Start *NS1*

Revision ID:

Stop *NS2*

Item Name: Blade

Start Date: 12/17/14 Start Qty: 12.00

12

Cust Item ID:

Required Date: 12/17/14 Req'd Qty: 12.00

12

Customer:

Reference:

Approvals:

Process Plan: MJS

Date: 14-12-19

Tooling:

Date:

Run Start *NR1*

QC:

Date:

SPC (Y/N):

Date:

Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

Draw Nbr	Revision Nbr
646.3000	N/C

100	BAND SAW	0.00							DAS 37 9-20 15.01.11
100									
Bandsaw	Memo	0.00							
Jeaspa Bandsaw	Cut Blank at 4.930"								

110	HAAS CNC VERTICAL MACHINING #1	0.00							DAS 37 9-20 15.01.12
110									
HAAS 1	Memo	0.00							
HAAS CNC vertical machine #1	1-Machine per folio FB150 DWG REV: <u>N/C</u> FOLIO REV: <u>AA</u>								

2- deburr and break all sharp edges except otherwise noted

KNIFE EDGE MUST BE SHARPENED USING STONE, REMOVE ALL
BURRS ON CUTTING EDGE

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS <table style="width: 100%;"> <tr> <td>Skid-tube ☐</td> <td>Crosstube ☐</td> <td>Water Jet ☐</td> <td>Engineering ☐</td> </tr> <tr> <td>Machining ☐</td> <td>Small Fab ☐</td> <td>Prod. Eng. Coord. ☐</td> <td>Quality ☐</td> </tr> <tr> <td>Thermoforming ☐</td> <td>Finishing ☐</td> <td>Rec/Store/Packaging ☐</td> <td>Other ☐</td> </tr> <tr> <td>Large Fab ☐</td> <td>Composite ☐</td> <td>Supplier ☐</td> <td></td> </tr> </table>	Skid-tube ☐	Crosstube ☐	Water Jet ☐	Engineering ☐	Machining ☐	Small Fab ☐	Prod. Eng. Coord. ☐	Quality ☐	Thermoforming ☐	Finishing ☐	Rec/Store/Packaging ☐	Other ☐	Large Fab ☐	Composite ☐	Supplier ☐	
Skid-tube ☐	Crosstube ☐	Water Jet ☐	Engineering ☐															
Machining ☐	Small Fab ☐	Prod. Eng. Coord. ☐	Quality ☐															
Thermoforming ☐	Finishing ☐	Rec/Store/Packaging ☐	Other ☐															
Large Fab ☐	Composite ☐	Supplier ☐																

Root Cause	Date	Step	Qty	Description of work order update or non-conformance	Initial Chief Eng	Action Description	Sign & Date	Verification	QC Inspector
Design									
Doc/Data									
Equip/Tooling									
Handling/Pre									
Material									
Operator									
Offset/Setup									
Process									
Supplier									
Training									
Transport									
Unapproved									

FAULT CATEGORY

Landing Gear ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Inspection Strip in Tube ☐ Marks/Chatter ☐ Turning Sequence ☐ Wave/Twist in Tube	General ☐ Bend ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Burrs ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Drawing ☐ Drill Holes ☐ Finish ☐ Fit/Function	☐ Folio/Program ☐ Grain ☐ Hardware ☐ Inspection Incomplete/Unqualified ☐ Instructions Incomplete/Unclear ☐ Misaligned/off center ☐ Mislabeled ☐ Misread ☐ Off-set ☐ Out of Calibration ☐ Out of Sequence
		☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Positioned Wrong ☐ Power Loss/Surge
		☐ Pressure/Forced ☐ Set-up ☐ Temperature/Cure ☐ Weld ☐ Wrong Stock Pulled ☐ Other

Work Order ID 127805

127805

Page 2

December-17-14 1:55:21 PM

Item ID: 646.3013 Accept ***N900040100*** Setup Start ***NS1***
 Revision ID: Stop ***NS2***
 Item Name: Blade
 Start Date: 12/17/14 Start Qty: 12.00 ***12*** Cust Item ID:
 Required Date: 12/17/14 Req'd Qty: 12.00 ***12*** Customer:
 Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
 QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
120	QC2- Inspect parts off machine FAI/FAIB	0.00							
120						12	Ø		DAS 37 9-89 15.01.12.
QC	Memo	0.00							
Quality Control									
130	QC8- Inspect parts - second check	0.00							
130						12	Ø		DAS 44 15/01/13 9-89
QC	Memo	0.00							
Quality Control									
140	Outsource process - Heat Treat	0.00							
140									
Outsource1	Memo	0.00							
Outsource process - Heat Treat	HEAT TREAT AS PER DWG, SEE NOTE #3								
	ISSUE P/O: 27040								

CL 15/01/13 12

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS <table style="width: 100%;"> <tr> <td>Skid-tube ☐</td> <td>Crosstube ☐</td> <td>Water Jet ☐</td> <td>Engineering ☐</td> </tr> <tr> <td>Machining ☐</td> <td>Small Fab ☐</td> <td>Prod. Eng. Coord. ☐</td> <td>Quality ☐</td> </tr> <tr> <td>Thermoforming ☐</td> <td>Finishing ☐</td> <td>Rec/Store/Packaging ☐</td> <td>Other ☐</td> </tr> <tr> <td>Large Fab ☐</td> <td>Composite ☐</td> <td>Supplier ☐</td> <td></td> </tr> </table>	Skid-tube ☐	Crosstube ☐	Water Jet ☐	Engineering ☐	Machining ☐	Small Fab ☐	Prod. Eng. Coord. ☐	Quality ☐	Thermoforming ☐	Finishing ☐	Rec/Store/Packaging ☐	Other ☐	Large Fab ☐	Composite ☐	Supplier ☐	
Skid-tube ☐	Crosstube ☐	Water Jet ☐	Engineering ☐															
Machining ☐	Small Fab ☐	Prod. Eng. Coord. ☐	Quality ☐															
Thermoforming ☐	Finishing ☐	Rec/Store/Packaging ☐	Other ☐															
Large Fab ☐	Composite ☐	Supplier ☐																

Root Cause	Date	Step	Qty	Description of work order update or non-conformance	Initial Chief Eng	Action Description	Sign & Date	Verification	QC Inspector
Design									
Doc/Data									
Equip/Tooling									
Handling/Pre									
Material									
Operator									
Offset/Setup									
Process									
Supplier									
Training									
Transport									
Unapproved									

FAULT CATEGORY

Landing Gear ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Inspection Strip in Tube ☐ Marks/Chatter ☐ Turning Sequence ☐ Wave/Twist in Tube	General ☐ Bend ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Burrs ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Drawing ☐ Drill Holes ☐ Finish ☐ Fit/Function	☐ Folio/Program ☐ Grain ☐ Hardware ☐ Inspection Incomplete/Unqualified ☐ Instructions Incomplete/Unclear ☐ Misaligned/off center ☐ Mislabeled ☐ Misread ☐ Off-set ☐ Out of Calibration ☐ Out of Sequence ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Positioned Wrong ☐ Power Loss/Surge ☐ Pressure/Forced ☐ Set-up ☐ Temperature/Cure ☐ Weld ☐ Wrong Stock Pulled ☐ Other
--	--	---

Work Order ID 127805

127805

Page 3

December-17-14 1:55:21 PM

Item ID: 646.3013 Accept ***N900040100*** Setup Start ***NS1***
 Revision ID: Stop ***NS2***
 Item Name: Blade
 Start Date: 12/17/14 Start Qty: 12.00 ***12*** Cust Item ID:
 Required Date: 12/17/14 Req'd Qty: 12.00 ***12*** Customer:
 Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
 QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
150	Receive & Inspect for Damage & Mat'l Certs	0.00							
150									
Packaging	Memo	0.00							
Packaging									
155	QC5- Inspect part completeness to step on W/O	0.00							
155									
QC	Memo	0.00							
Quality Control									
160	Spray Painting per QSI005 4.2	0.00							
160									
SprayPaint	Memo	0.00							
Spray Painting	PRIME AS PER DWG, SEE NOTE #4								
	PRIMER BATCH: <u>131121</u>								

12x 88 15-01-26

(12) DAS 38 9-89
 JAN 26 2015

12 CN 15-01-28

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS <table style="width: 100%;"> <tr> <td>Skid-tube ☐</td> <td>Crosstube ☐</td> <td>Water Jet ☐</td> <td>Engineering ☐</td> </tr> <tr> <td>Machining ☐</td> <td>Small Fab ☐</td> <td>Prod. Eng. Coord. ☐</td> <td>Quality ☐</td> </tr> <tr> <td>Thermoforming ☐</td> <td>Finishing ☐</td> <td>Rec/Store/Packaging ☐</td> <td>Other ☐</td> </tr> <tr> <td>Large Fab ☐</td> <td>Composite ☐</td> <td>Supplier ☐</td> <td></td> </tr> </table>	Skid-tube ☐	Crosstube ☐	Water Jet ☐	Engineering ☐	Machining ☐	Small Fab ☐	Prod. Eng. Coord. ☐	Quality ☐	Thermoforming ☐	Finishing ☐	Rec/Store/Packaging ☐	Other ☐	Large Fab ☐	Composite ☐	Supplier ☐	
Skid-tube ☐	Crosstube ☐	Water Jet ☐	Engineering ☐															
Machining ☐	Small Fab ☐	Prod. Eng. Coord. ☐	Quality ☐															
Thermoforming ☐	Finishing ☐	Rec/Store/Packaging ☐	Other ☐															
Large Fab ☐	Composite ☐	Supplier ☐																

Root Cause	Date	Step	Qty	Description of work order update or non-conformance	Initial Chief Eng	Action Description	Sign & Date	Verification	QC Inspector
Design									
Doc/Data									
Equip/Tooling									
Handling/Pre									
Material									
Operator									
Offset/Setup									
Process									
Supplier									
Training									
Transport									
Unapproved									

FAULT CATEGORY

Landing Gear ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Inspection Strip in Tube ☐ Marks/Chatter ☐ Turning Sequence ☐ Wave/Twist in Tube	General ☐ Bend ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Burrs ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Drawing ☐ Drill Holes ☐ Finish ☐ Fit/Function	☐ Folio/Program ☐ Grain ☐ Hardware ☐ Inspection Incomplete/Unqualified ☐ Instructions Incomplete/Unclear ☐ Misaligned/off center ☐ Mislabeled ☐ Misread ☐ Off-set ☐ Out of Calibration ☐ Out of Sequence	☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Positioned Wrong ☐ Power Loss/Surge ☐ Pressure/Forced ☐ Set-up ☐ Temperature/Cure ☐ Weld ☐ Wrong Stock Pulled ☐ Other
--	--	---	--

Work Order ID 127805

127805

December-17-14 1:55:21 PM

Page 4

Item ID: 646.3013 Accept ***N900040100*** Setup Start ***NS1***
 Revision ID: Stop ***NS2***
 Item Name: Blade
 Start Date: 12/17/14 Start Qty: 12.00 ***12*** Cust Item ID:
 Required Date: 12/17/14 Req'd Qty: 12.00 ***12*** Customer:
 Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
 QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
170	QC14- Inspect Spray Paint	0.00							DAS 38 9-89
170						(12)			
QC	Memo	0.00							
Quality Control									JAN 29 2015
180	Identify as per dwg & Stock Location: <u>MF</u>	0.00							
180						12			DAS 06 9-89
Packaging	Memo	0.00							JAN 31 2015
Packaging	***IDENTIFY AS PER APICAL MPP-120 BY STAMPING P# AND REV***								
190	QC21- Final Inspection - Work Order Release	0.00							
190									
QC	Memo	0.00							
Quality Control									MLJ 1502-02

15.2.2

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Crosstube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐
--	--	---

Root Cause	Date	Step	Qty	Description of work order update or non-conformance	Initial Chief Eng	Action Description	Sign & Date	Verification	QC Inspector
Design									
Doc/Data									
Equip/Tooling									
Handling/Pre									
Material									
Operator									
Offset/Setup									
Process									
Supplier									
Training									
Transport									
Unapproved									

FAULT CATEGORY

Landing Gear ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Inspection Strip in Tube ☐ Marks/Chatter ☐ Turning Sequence ☐ Wave/Twist in Tube	General ☐ Bend ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Burrs ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Drawing ☐ Drill Holes ☐ Finish ☐ Fit/Function	☐ Folio/Program ☐ Grain ☐ Hardware ☐ Inspection Incomplete/Unqualified ☐ Instructions Incomplete/Unclear ☐ Misaligned/off center ☐ Mislabeled ☐ Misread ☐ Off-set ☐ Out of Calibration ☐ Out of Sequence	☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Positioned Wrong ☐ Power Loss/Surge ☐ Pressure/Forced ☐ Set-up ☐ Temperature/Cure ☐ Weld ☐ Wrong Stock Pulled ☐ Other
--	--	---	--

Picklist Print

December-17-14 1:55:21 PM

Page 1

Work Order ID: 127805

127805

Parent Item: 646.3013

646.3013

Parent Item Name: Blade

Start Date: 12/17/14

Required Date: 12/17/14

Start Qty: 12.00

Required Qty: 12.00

Comments: IPP REV:A NEW ISSUE 12/11/09 JFS VERIFY BY: JLM

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
MSTEEL-A2- B0.500X1.250		Purchased	No			100	f	106.9000	0.411	5.191579			

MSTFFI -A2-B0 500X1 250

AISI A2 TOOL STEEL BAR, 0.500 X 1.250

DAS

37

9-29 15-01-11

Location

Loc Qty

Loc Code

MAT010

106.9

M126438

105.5

M127494

1.4

5.19

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS <table style="width: 100%;"> <tr> <td>Skid-tube ☐</td> <td>Crosstube ☐</td> <td>Water Jet ☐</td> <td>Engineering ☐</td> </tr> <tr> <td>Machining ☐</td> <td>Small Fab ☐</td> <td>Prod. Eng. Coord. ☐</td> <td>Quality ☐</td> </tr> <tr> <td>Thermoforming ☐</td> <td>Finishing ☐</td> <td>Rec/Store/Packaging ☐</td> <td>Other ☐</td> </tr> <tr> <td>Large Fab ☐</td> <td>Composite ☐</td> <td>Supplier ☐</td> <td></td> </tr> </table>	Skid-tube ☐	Crosstube ☐	Water Jet ☐	Engineering ☐	Machining ☐	Small Fab ☐	Prod. Eng. Coord. ☐	Quality ☐	Thermoforming ☐	Finishing ☐	Rec/Store/Packaging ☐	Other ☐	Large Fab ☐	Composite ☐	Supplier ☐	
Skid-tube ☐	Crosstube ☐	Water Jet ☐	Engineering ☐															
Machining ☐	Small Fab ☐	Prod. Eng. Coord. ☐	Quality ☐															
Thermoforming ☐	Finishing ☐	Rec/Store/Packaging ☐	Other ☐															
Large Fab ☐	Composite ☐	Supplier ☐																

Root Cause	Date	Step	Qty	Description of work order update or non-conformance	Initial Chief Eng	Action Description	Sign & Date	Verification	QC Inspector
Design									
Doc/Data									
Equip/Tooling									
Handling/Pre									
Material									
Operator									
Offset/Setup									
Process									
Supplier									
Training									
Transport									
Unapproved									

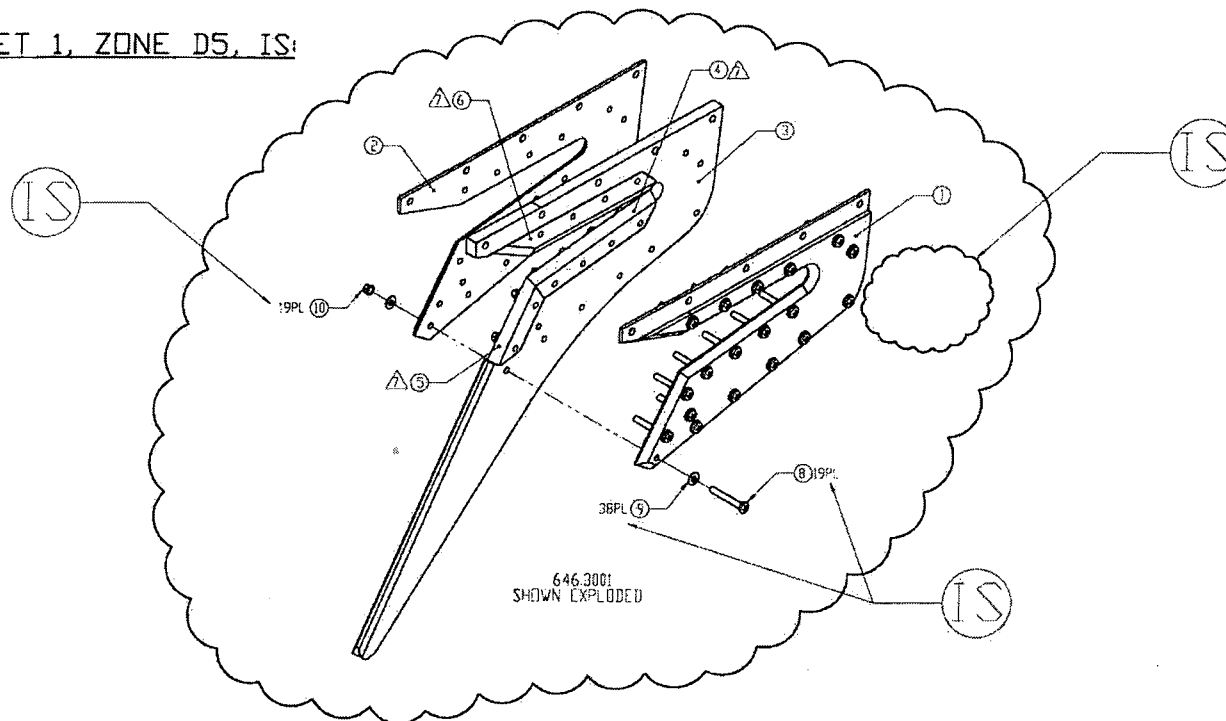
FAULT CATEGORY

Landing Gear ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Inspection Strip in Tube ☐ Marks/Chatter ☐ Turning Sequence ☐ Wave/Twist in Tube	General ☐ Bend ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Burrs ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Drawing ☐ Drill Holes ☐ Finish ☐ Fit/Function	☐ Folio/Program ☐ Grain ☐ Hardware ☐ Inspection Incomplete/Unqualified ☐ Instructions Incomplete/Unclear ☐ Misaligned/off center ☐ Mislabeled ☐ Misread ☐ Off-set ☐ Out of Calibration ☐ Out of Sequence
		☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Positioned Wrong ☐ Power Loss/Surge
		☐ Pressure/Forced ☐ Set-up ☐ Temperature/Cure ☐ Weld ☐ Wrong Stock Pulled ☐ Other

APICAL
INDUSTRIES, INC.

ENGINEERING CHANGE NOTICE NO.		02195		SHEET 1 OF 4	
DWG NO.	646.3000	REV: N/C	PREPARED BY	S. HUFF	DATE: 01/05/09
DWG TITLE:		LOWER CUTTER ASSY			
APPROVED BY:	ENGR <i>[Signature]</i>	MFG	<i>[Signature]</i>	QC	<i>[Signature]</i>
TRANSACTION CODES (TC): A-ADD C-CREATE R-REVISE D-DELETE		REASON: REMOVED RIVETS IN FAVOR OF ADDITIONAL SCREWS			
		EFF:		NEXT ORDER	

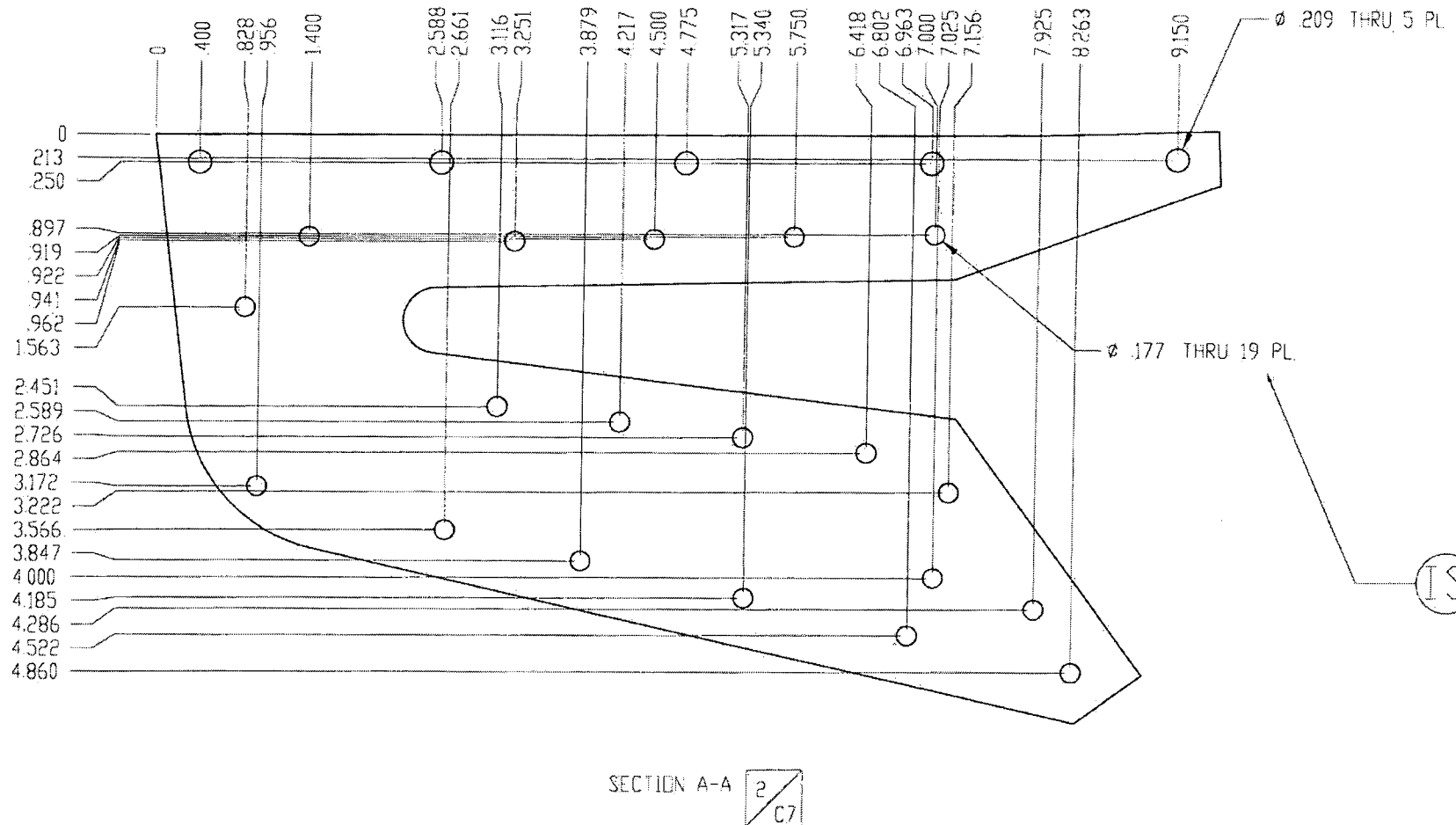
SHEET 1, ZONE D5, IS:



SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 127805 MLC
14-12-19

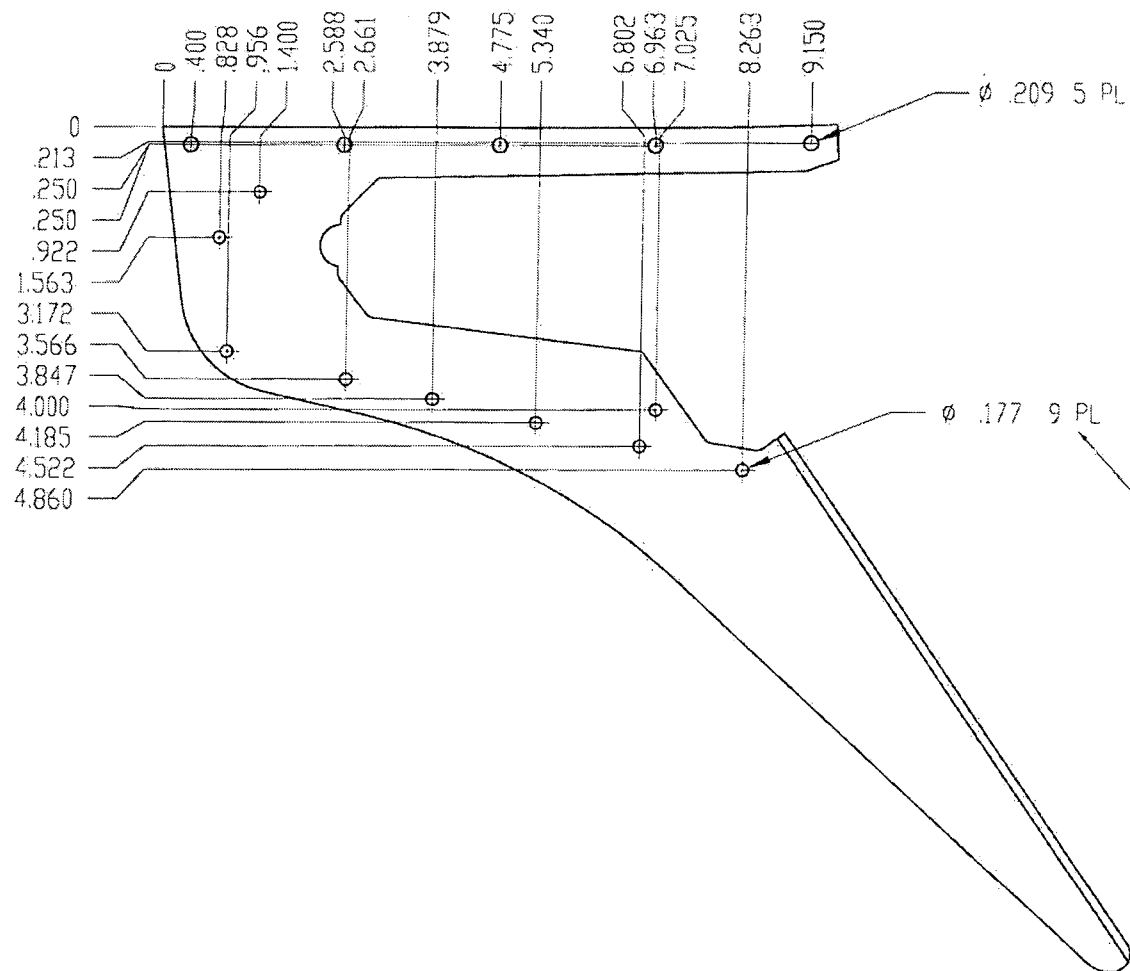
10	R	601.1541		19	LOCKNUT	MS21042L08
9	R	601.2764		38	WASHER	NAS1149FN832P
8	R	601.2765		19	SCREW	MS27039-0819
7	D	601.2766		2	RIVET	MS20470AD5-18
				3001		
F/N TC	PART NUMBER	QTY	DESCRIPTION	MATERIAL/SPECIFICATION		
DOCUMENTS EFFECTED:				CHANGE CATEGORY		DER REVIEW REQUIRED
				☐ MDL ☒ INSTALL INSTRUC ☒ ICA ☐ FMS ☒ BOM		☐ YES ☒ NO
				☐ MAJOR ☒ MINOR		

SHEET 3 IS:



F/N	TC	PART NUMBER	QTY	DESCRIPTION	MATERIAL/SPECIFICATION

SHEET 5 IS:



SECTION F-F

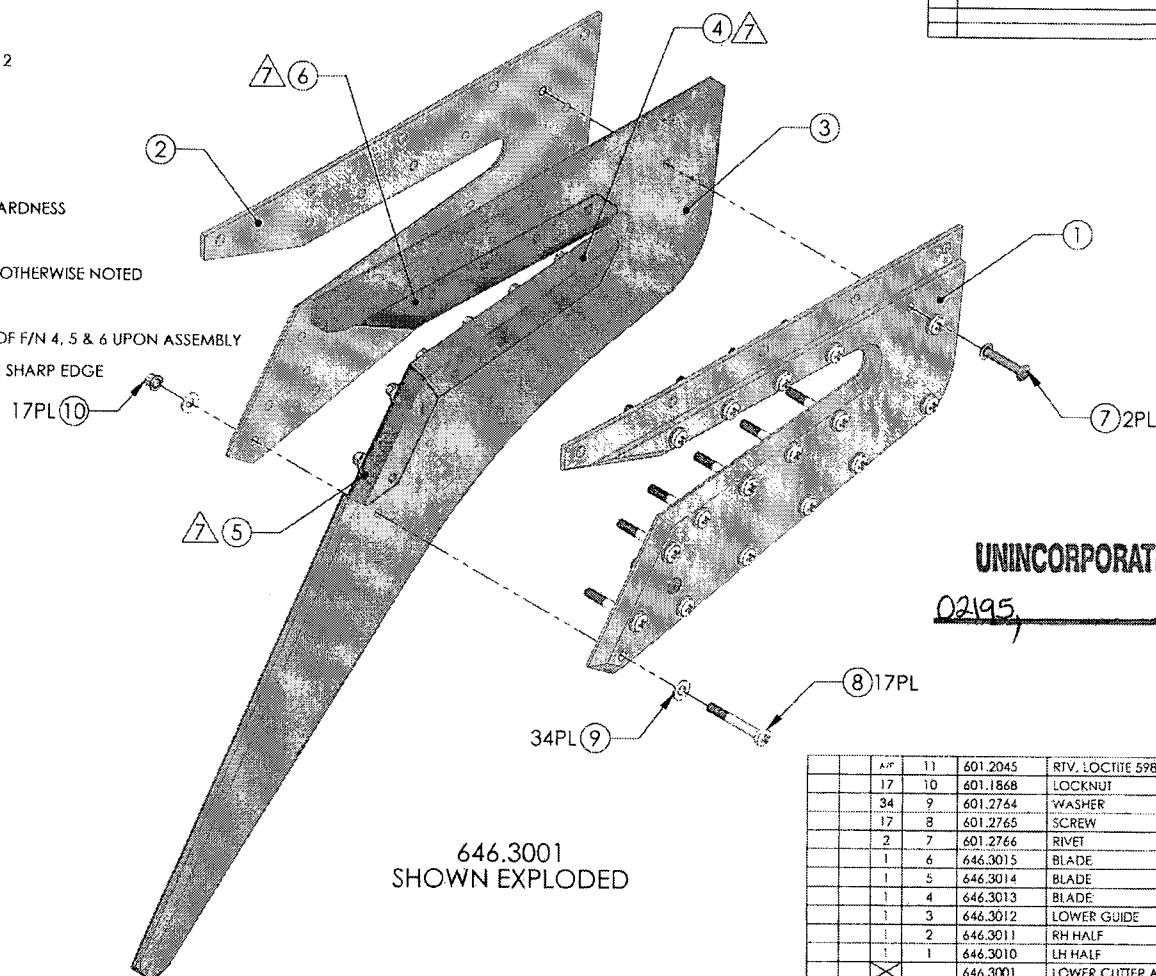


F/N	TC	PART NUMBER	QTY	DESCRIPTION	MATERIAL/SPECIFICATION

THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF APICAL INDUSTRIES. ANY REPRODUCTION IN PART OR WHOLE WITHOUT THE WRITTEN PERMISSION OF APICAL INDUSTRIES IS PROHIBITED.

NOTES:

- 1 MATERIAL: ALUMINUM 7075-T651 PER AMS-QQ-A-250/12
- 2 FINISH: HARD ANODIZE IAW MIL-A-8625 TYPE III, CLASS 2, COLOR BLACK; CARDINAL 4860-50 PRETREATMENT PRIMER PRIME IAW MIL-P-23377J TYPE I CLASS N
- 3 MATERIAL: AISI A2 TOOL STEEL
CONDITION: ANNEALED
POST PROCESS: HEAT TREAT TO 58-62 Rc ROCKWELL HARDNESS
- 4 FINISH: PRIME IAW MIL-P-23377J TYPE I CLASS N
- 5 DEBURR AND BREAK ALL SHARP EDGES EXCEPT WHERE OTHERWISE NOTED
- 6 IDENTIFY IAW MPP-120
- 7 APPLY F/N 11 AS REQUIRED TO ALL FAYING SURFACES OF F/N 4, 5 & 6 UPON ASSEMBLY
- 8 CUTTING EDGE INTENDED TO BE SHARP, DO NOT BREAK SHARP EDGE



UNINCORPORATED ECN(s)

02195

QTY	REV	FIND #	PART #	DESCRIPTION	MATL	SPEC.
1	11		601.2045	RTV, LOCITE 598		
17	10		601.1868	LOCKNUT	1/4-20 X 1/2-13	
34	9		601.2764	WASHER	1/4-20 X 1/2-13	
17	8		601.2765	SCREW	1/4-20 X 1/2-13	
2	7		601.2766	RIVET	1/4-20 X 1/2-13	
1	6		646.3015	BLADE		
1	5		646.3014	BLADE		
1	4		646.3013	BLADE		
1	3		646.3012	LOWER GUIDE		
1	2		646.3011	RH HALF		
1	1		646.3010	LH HALF		
1			646.3001	LOWER CUTTER ASSY		
1			646.3000	LOWER CUTTER ASSY		

QTY	REV	FIND #	PART #	DESCRIPTION	MATL	SPEC.
1	11		601.2045	RTV, LOCITE 598		
17	10		601.1868	LOCKNUT	1/4-20 X 1/2-13	
34	9		601.2764	WASHER	1/4-20 X 1/2-13	
17	8		601.2765	SCREW	1/4-20 X 1/2-13	
2	7		601.2766	RIVET	1/4-20 X 1/2-13	
1	6		646.3015	BLADE		
1	5		646.3014	BLADE		
1	4		646.3013	BLADE		
1	3		646.3012	LOWER GUIDE		
1	2		646.3011	RH HALF		
1	1		646.3010	LH HALF		
1			646.3001	LOWER CUTTER ASSY		
1			646.3000	LOWER CUTTER ASSY		

QTY	REV	FIND #	PART #	DESCRIPTION	MATL	SPEC.
1	11		601.2045	RTV, LOCITE 598		
17	10		601.1868	LOCKNUT	1/4-20 X 1/2-13	
34	9		601.2764	WASHER	1/4-20 X 1/2-13	
17	8		601.2765	SCREW	1/4-20 X 1/2-13	
2	7		601.2766	RIVET	1/4-20 X 1/2-13	
1	6		646.3015	BLADE		
1	5		646.3014	BLADE		
1	4		646.3013	BLADE		
1	3		646.3012	LOWER GUIDE		
1	2		646.3011	RH HALF		
1	1		646.3010	LH HALF		
1			646.3001	LOWER CUTTER ASSY		
1			646.3000	LOWER CUTTER ASSY		

QTY	REV	FIND #	PART #	DESCRIPTION	MATL	SPEC.
1	11		601.2045	RTV, LOCITE 598		
17	10		601.1868	LOCKNUT	1/4-20 X 1/2-13	
34	9		601.2764	WASHER	1/4-20 X 1/2-13	
17	8		601.2765	SCREW	1/4-20 X 1/2-13	
2	7		601.2766	RIVET	1/4-20 X 1/2-13	
1	6		646.3015	BLADE		
1	5		646.3014	BLADE		
1	4		646.3013	BLADE		
1	3		646.3012	LOWER GUIDE		
1	2		646.3011	RH HALF		
1	1		646.3010	LH HALF		
1			646.3001	LOWER CUTTER ASSY		
1			646.3000	LOWER CUTTER ASSY		

QTY	REV	FIND #	PART #	DESCRIPTION	MATL	SPEC.
1	11		601.2045	RTV, LOCITE 598		
17	10		601.1868	LOCKNUT	1/4-20 X 1/2-13	
34	9		601.2764	WASHER	1/4-20 X 1/2-13	
17	8		601.2765	SCREW	1/4-20 X 1/2-13	
2	7		601.2766	RIVET	1/4-20 X 1/2-13	
1	6		646.3015	BLADE		
1	5		646.3014	BLADE		
1	4		646.3013	BLADE		
1	3		646.3012	LOWER GUIDE		
1	2		646.3011	RH HALF		
1	1		646.3010	LH HALF		
1			646.3001	LOWER CUTTER ASSY		
1			646.3000	LOWER CUTTER ASSY		

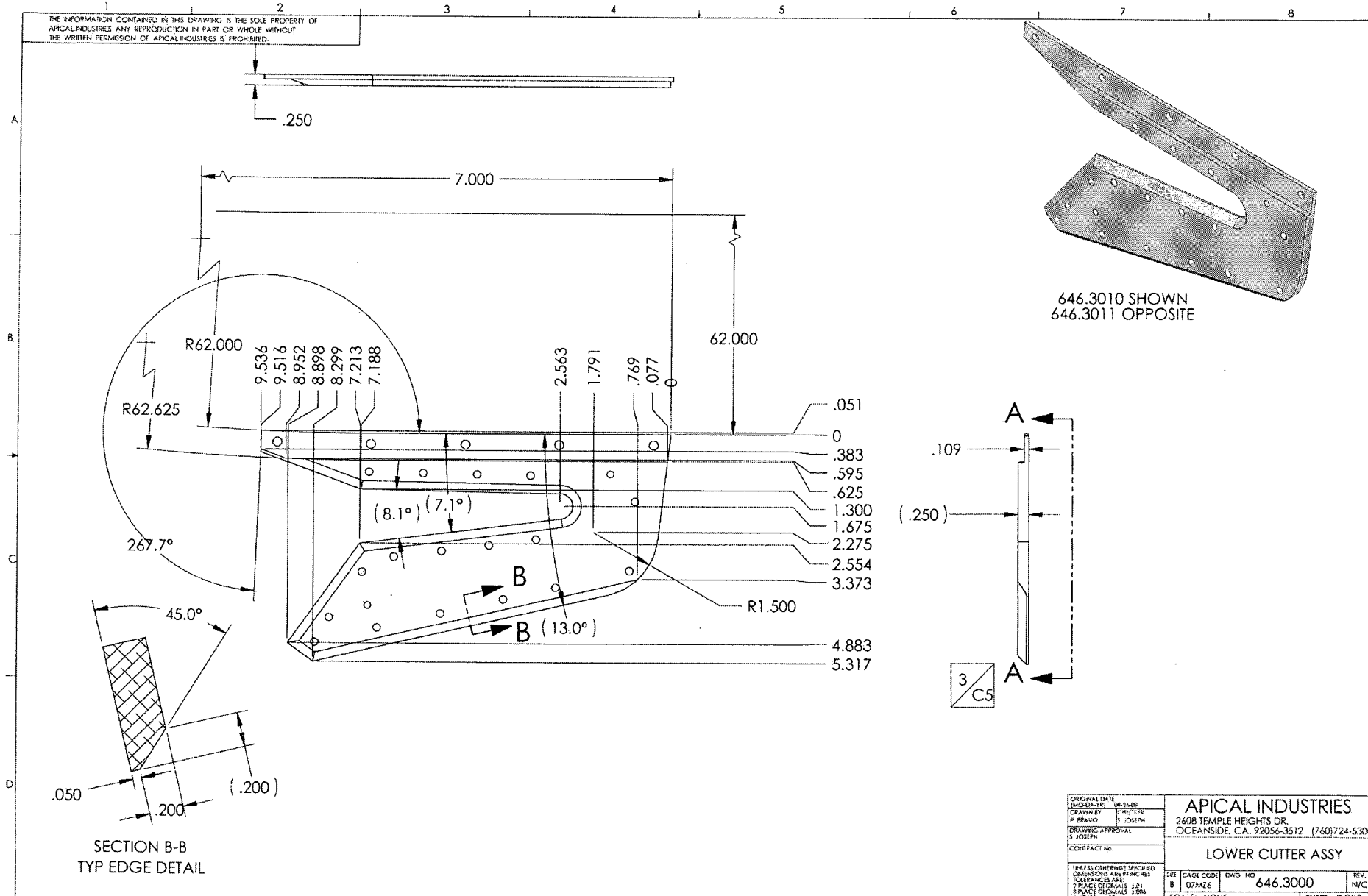
APICAL INDUSTRIES

2608 TEMPLE HEIGHTS DR.
OCEANSIDE, CA. 92056-3512 (760)724-5300

LOWER CUTTER ASSY

SCALE: NONE
SHEET 1 OF 8

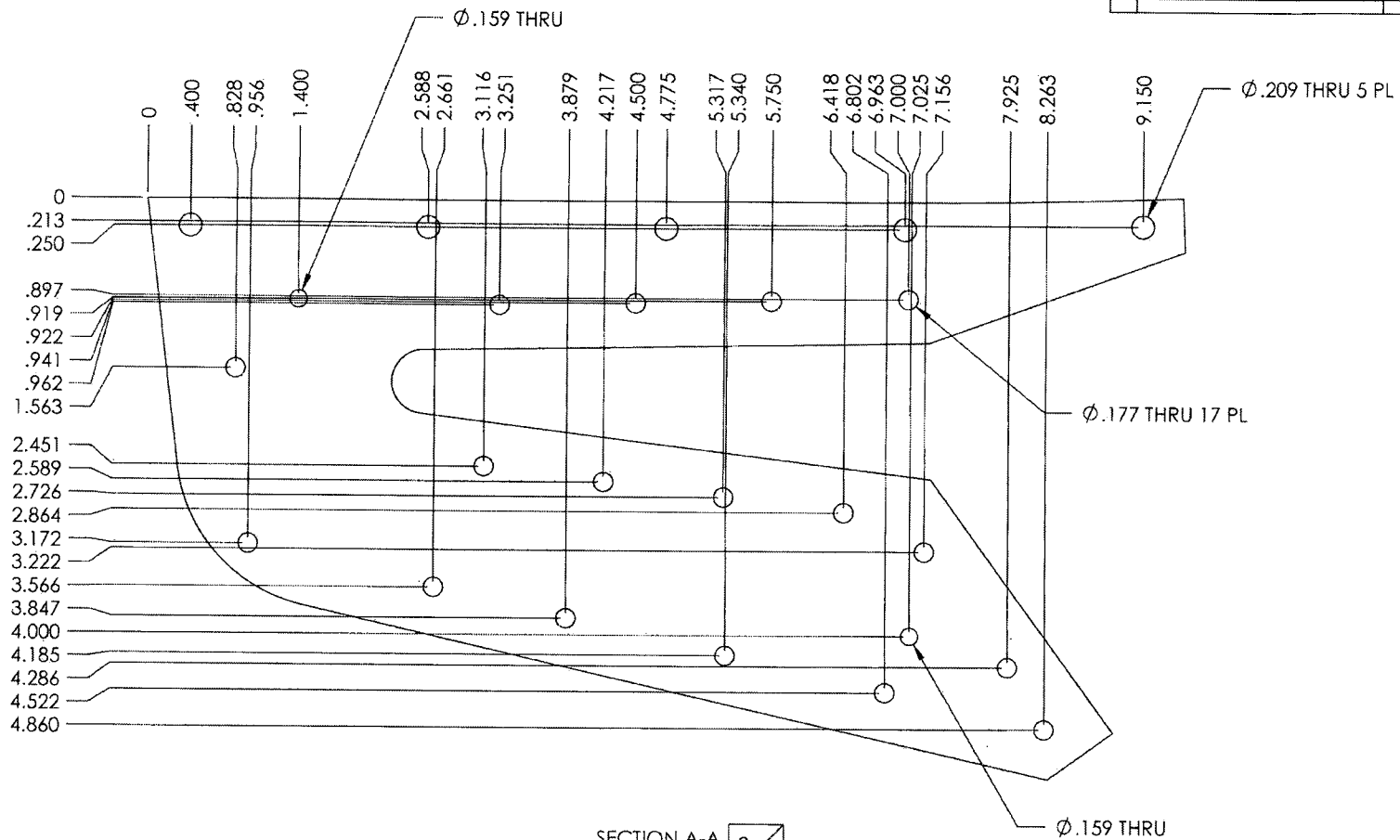
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF APICAL INDUSTRIES. ANY REPRODUCTION IN PART OR WHOLE WITHOUT THE WRITTEN PERMISSION OF APICAL INDUSTRIES IS PROHIBITED.



ORIGINAL DATE (MO-DA-YR) 06-24-08		APICAL INDUSTRIES	
DRAWN BY P. BRUNO		2608 TEMPLE HEIGHTS DR. OCEANSIDE, CA. 92056-3512 (760)724-5300	
CHECKED BY S. JOSEPH		LOWER CUTTER ASSY	
DRAWING APPROVAL S. JOSEPH		REV. N/C	
CONTRACT NO.		SCALE: NONE	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: 2 PLACE DECIMALS ±.01 3 PLACE DECIMALS ±.001 ANGLES ±.5°		SHEET 2 OF 8	

THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF APICAL INDUSTRIES. ANY REPRODUCTION IN PART OR WHOLE WITHOUT THE WRITTEN PERMISSION OF APICAL INDUSTRIES IS PROHIBITED.

REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED

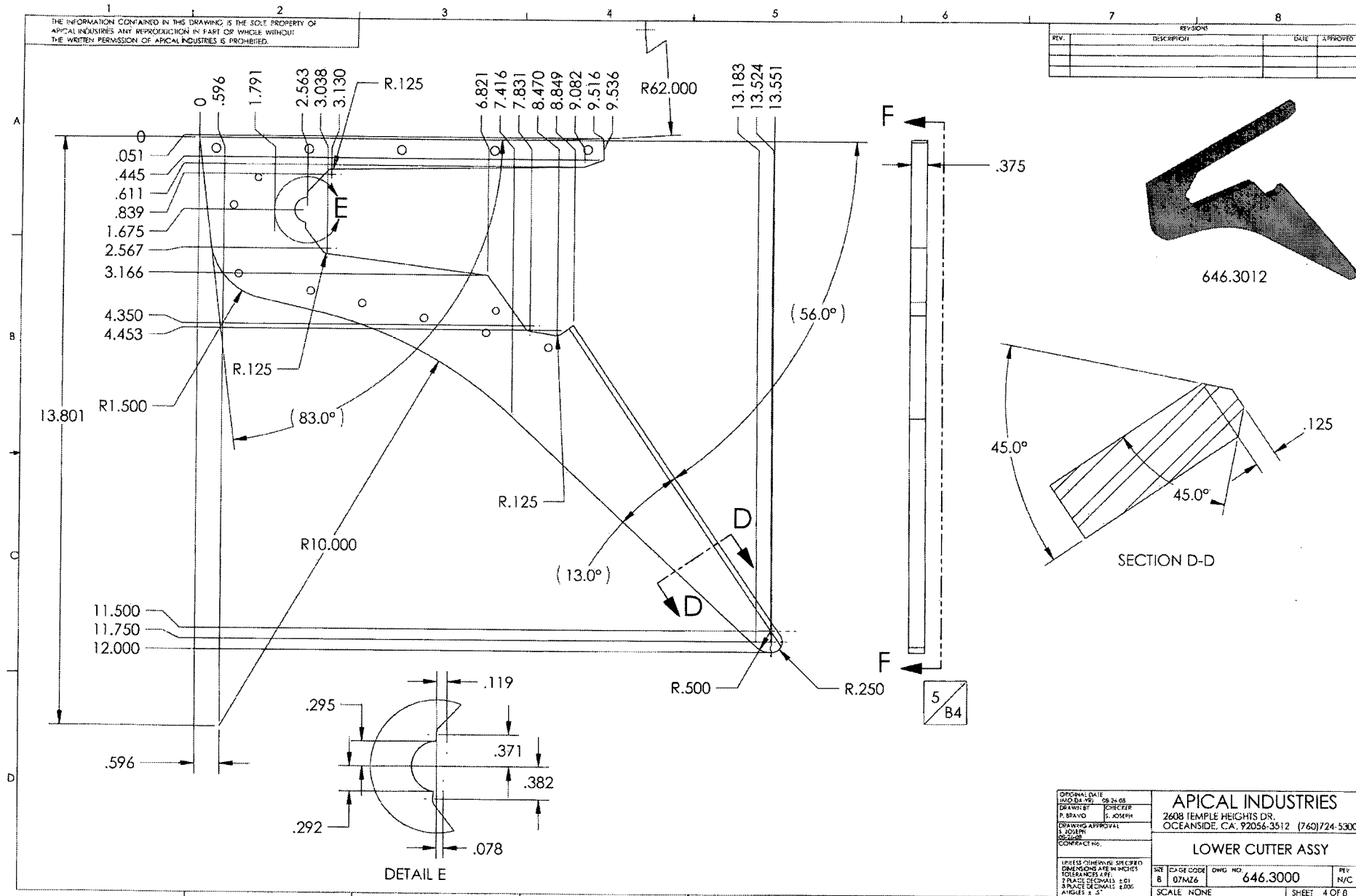


SECTION A-A 2/C7

ORIGINAL DATE (MACHD-10) 08-20-69		APICAL INDUSTRIES	
DRAWN BY: J. CHESTER		2608 TEMPLE HEIGHTS DR.	
P. RAYO		OCEANSIDE, CA. 92056-3512 (760)724-5300	
DRAWING APPROVAL J. JOSEPH		LOWER CUTTER ASSY	
CONTRACT NO.			
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: 1 PLACE DECIMALS ± .01 2 PLACE DECIMALS ± .005 ANGLES ± .5°		SIZE 8	REV. N/C
SCALE NONE		DWG NO. 646.3000	SHEET 3 OF 8

THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF
APICAL INDUSTRIES AND REPRODUCTION IN PART OR WHOLE WITHOUT
THE WRITTEN PERMISSION OF APICAL INDUSTRIES IS PROHIBITED.

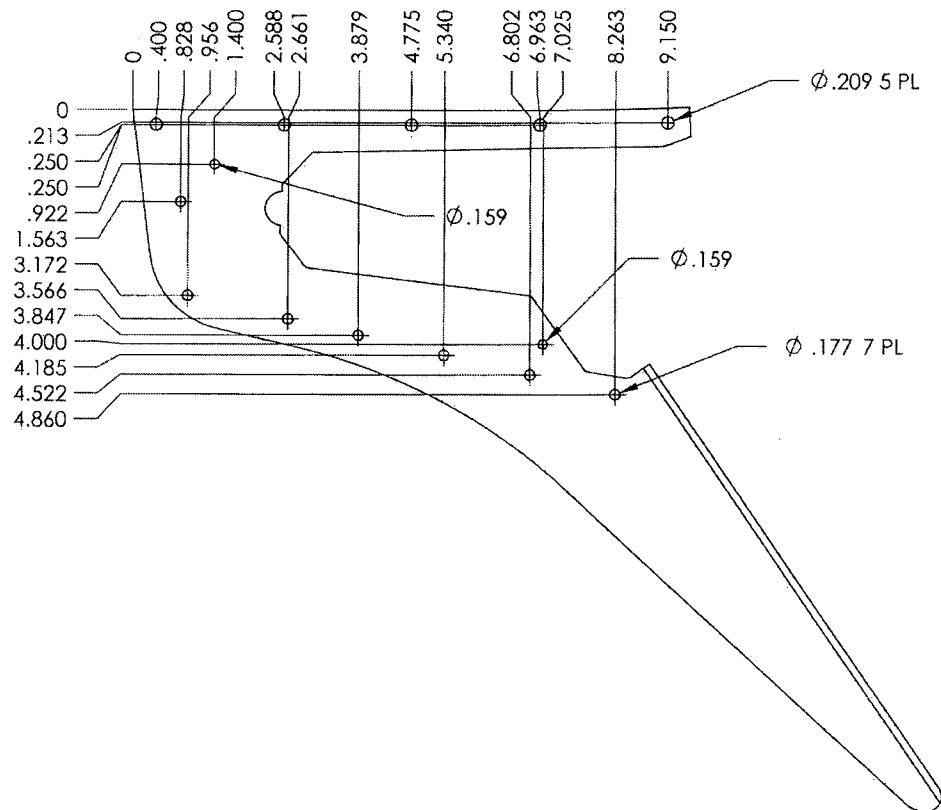
REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED



OPTIONAL DATE (ISO DATED) 08-24-08 DRAWN BY: JOSEPH P. BRAVO DRAWING APPROVAL S. JOSEPH CONTRACT NO.	APICAL INDUSTRIES 2608 TEMPLE HEIGHTS DR. OCEANSIDE, CA. 92056-3512 (760) 724-5300		
LOWER CUTTER ASSY			
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: 3 DECIMALS ± .01 2 DECIMALS ± .005 ANGLES ± .5°	SHEET 8	CA DE CODE 07M26	DWG NO. 646.3000
SCALE NONE		REV N/C	
SHEET 4 OF 8			

THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF
APICAL INDUSTRIES ANY REPRODUCTION IN PART OR WHOLE WITHOUT
THE WRITTEN PERMISSION OF APICAL INDUSTRIES IS PROHIBITED

REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED

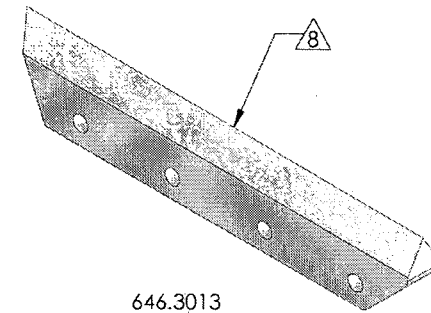
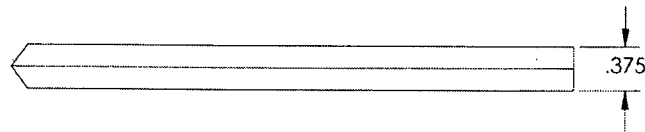


SECTION F-F 4
B6

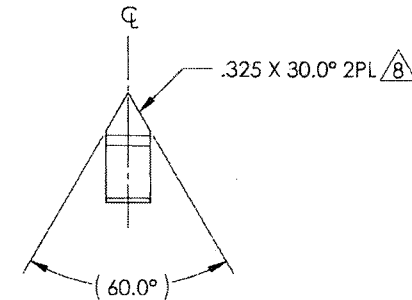
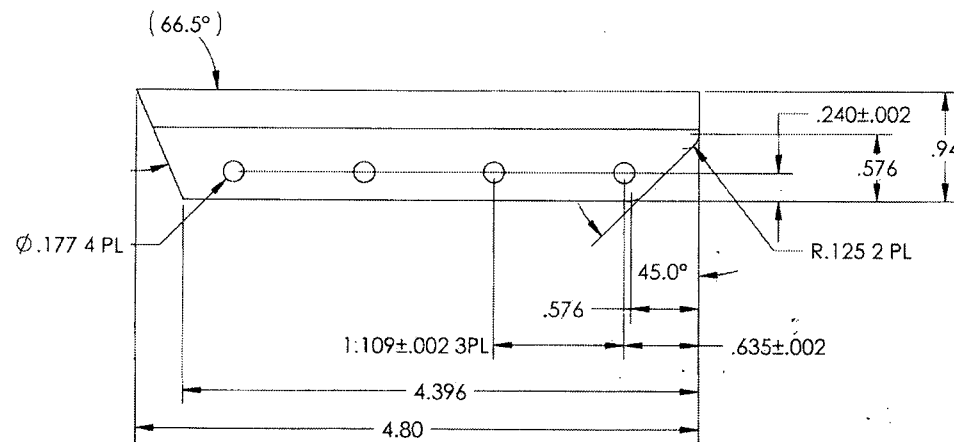
ORIGINAL DATE (MM-DD-YY) 08-21-08	APICAL INDUSTRIES		
DRAWN BY: TORCEK P. BRAYO D. JOSEPH	2608 TEMPLE HEIGHTS DR. OCEANSIDE, CA. 92056-3512 (760)724-5300		
DRAWING APPROVAL: D. JOSEPH 08/26/08	LOWER CUTTER ASSY		
CONTRACT NO.	SEE CAGE CODE B 07M26	OWG NO. 646.3000	REV. N/C
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES ARE: 1. 2 PLACE DECIMALS ±.01 2. 3 PLACE DECIMALS ±.005	SCALE: NONE	SHEET 5 OF 8	

THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF
APICAL INDUSTRIES. ANY REPRODUCTION IN PART OR WHOLE WITHOUT
THE WRITTEN PERMISSION OF APICAL INDUSTRIES IS PROHIBITED.

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED



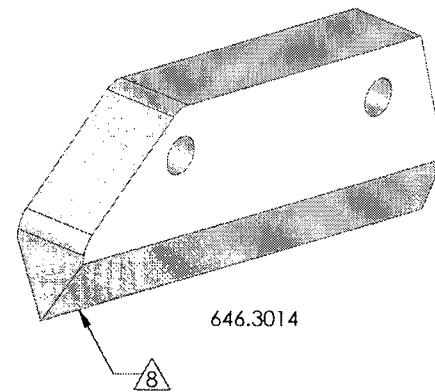
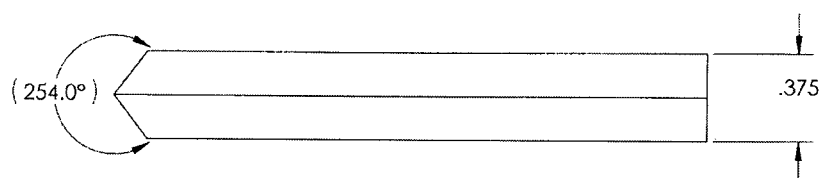
646.3013



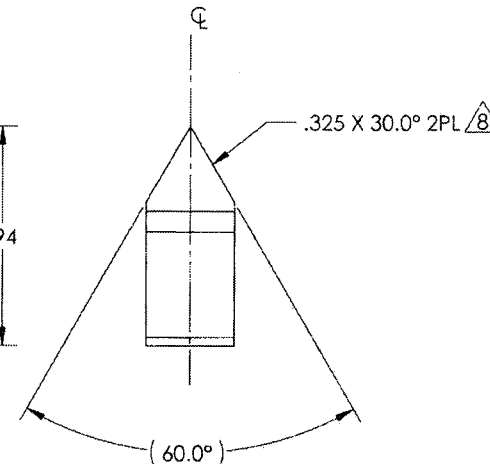
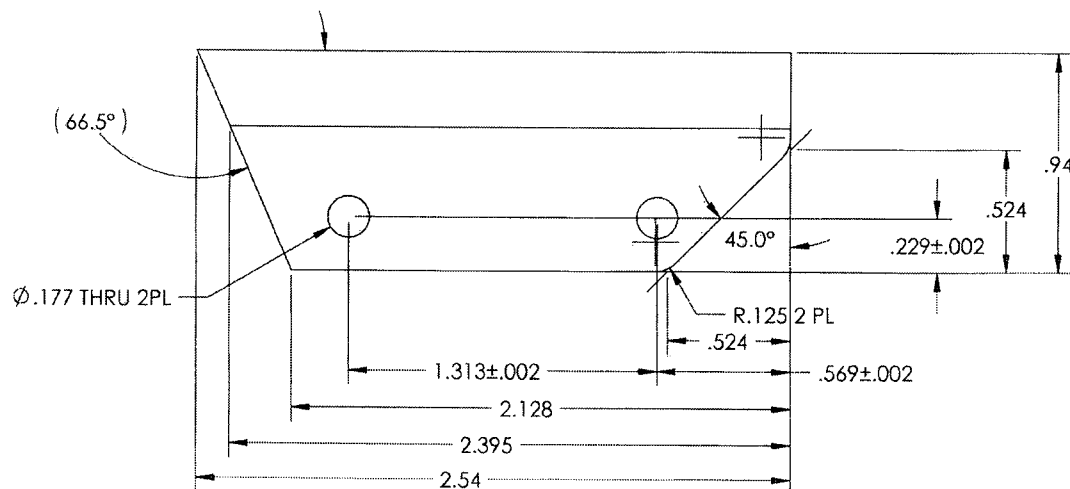
ORIGINAL DATE REVISED DATE		APICAL INDUSTRIES	
DRAWN BY F. BRAYO		2608 TEMPLE HEIGHTS DR. OCEANSIDE, CA. 92056-3512 (760)724-5300	
CHECKED BY D. JOSEPH		LOWER CUTTER ASSY	
DRAWING APPROVAL D. JOSEPH		SCALE NONE	
CONTRACT NO.		SHEET 6 OF 8	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE 2 PLACE DECIMALS ±.01 ANGLES ±.5°		MT B	REV N/C
		CAGE CODE 07M126	QWTS NO 646.3000

THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF APICAL INDUSTRIES. ANY REPRODUCTION IN PART OR WHOLE WITHOUT THE WRITTEN PERMISSION OF APICAL INDUSTRIES IS PROHIBITED.

REV		DESCRIPTION	DATE	APPROVED



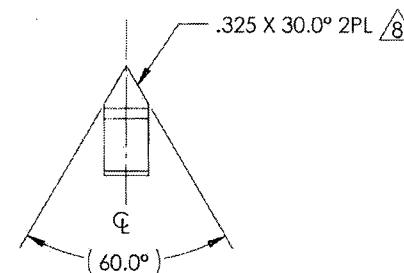
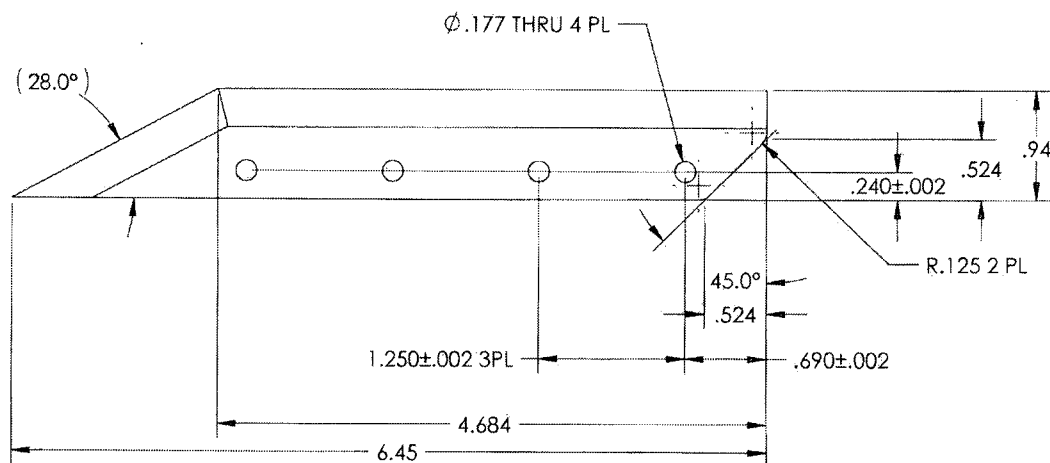
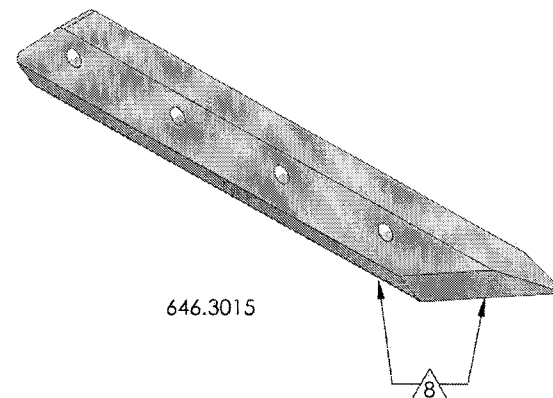
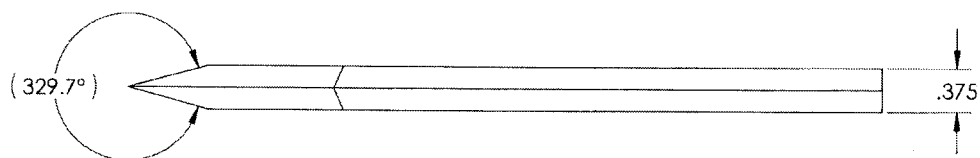
646.3014



ORIGINAL DATE DWG. DATE: 08-26-08 DRAWN BY: J. JOSEPH P. BRAVO DRAWING APPROVAL J. JOSEPH CHECKED BY: J. JOSEPH		APICAL INDUSTRIES 2608 TEMPLE HEIGHTS DR OCEANSIDE, CA. 92056-3512 (760)724-5300	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: 2 PLACE DECIMALS ±.01 3 PLACE DECIMALS ±.005 ANGLES ± .5°		LOWER CUTTER ASSY	
SHEET B	CAGE CODE D7M16	QNC. NO. 646.3000	REV. N/C
SCALE: NONE		SHEET: 7 OF 8	

THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF APICAL INDUSTRIES. ANY REPRODUCTION IN PART OR WHOLE WITHOUT THE WRITTEN PERMISSION OF APICAL INDUSTRIES IS PROHIBITED.

REV.	DESCRIPTION	DATE	APPROVED



ORIGINAL DATE 06-22-08	APICAL INDUSTRIES		
DRAWN BY P. SPAYO	2608 TEMPLE HEIGHTS DR.		
CHECKED BY D. JOSEPH	OCEANSIDE, CA. 92056-3512 (760) 724-5300		
DRAWING APPROVAL P. SPAYO	LOWER CUTTER ASSY		
CONTRACT NO.	REV. 8	DWG. NO. 646.3000	REV. N/C
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: 3 PLACE DECIMALS ±.01 ANGLES ± .5°	SCALE NONE	SHEET 6 OF 8	

Jean-Luc Menard

From: Pablo Bravo
Sent: January-12-15 1:20 PM
To: Jean-Luc Menard
Subject: RE: Deviation 646.3013

JL,

It should be okay to use the parts.

Pablo

From: Jean-Luc Menard
Sent: Monday, January 12, 2015 10:18 AM
To: Pablo Bravo
Subject: RE: Deviation 646.3013

They all range from .7015-.703.

JL

From: Pablo Bravo
Sent: January-12-15 1:12 PM
To: Jean-Luc Menard
Subject: RE: Deviation 646.3013

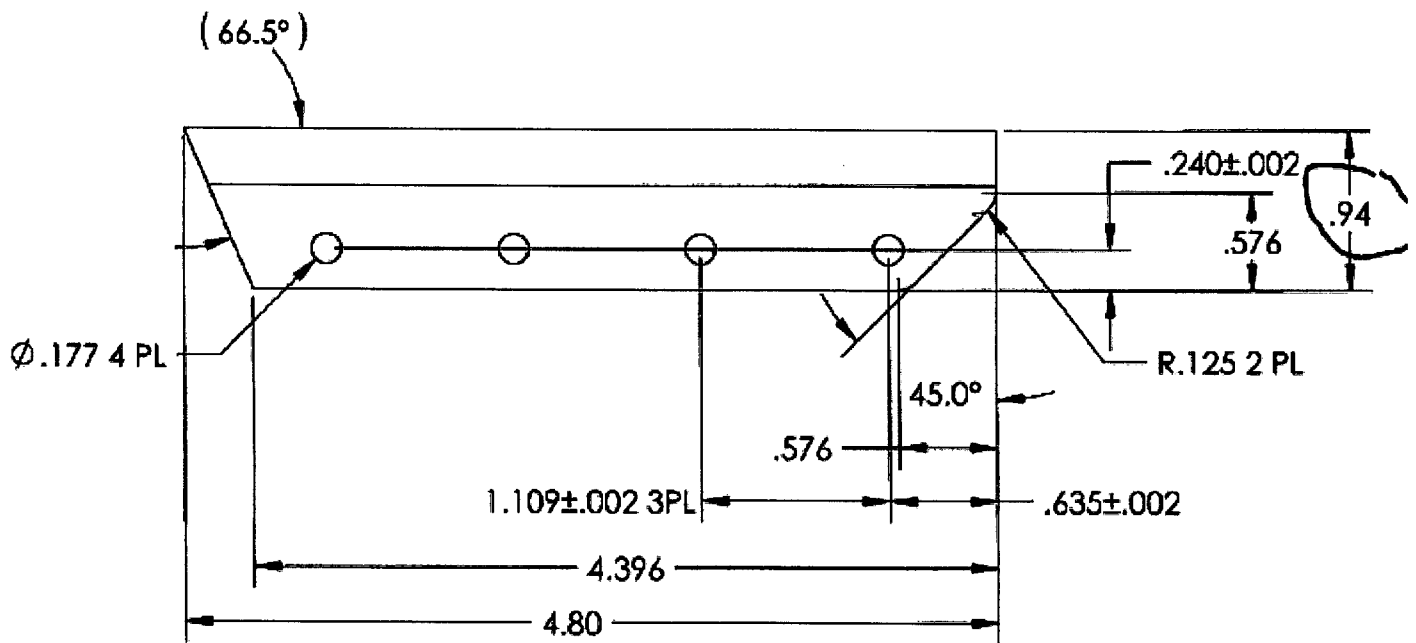
JL,

Can you take a measurement of the center of the holes to the edge of the blade? It should be around .700, though understandably these parts will be out of tolerance. If the holes are consistent, then we might be able to use these parts.

Thanks,
Pablo

From: Jean-Luc Menard
Sent: Monday, January 12, 2015 9:58 AM
To: Pablo Bravo
Subject: Deviation 646.3013

Hi Pablo,
Got a few parts coming in at 928", is this acceptable?
THX
JL



Jean-Luc Ménard
 Production Engineering Supervisor

DART AEROSPACE
 T 1 613 632-5200 > 227
 F 1 613 632-5246
 1 800 556- 4166
www.dartaerospace.com





Dart Aerospace Ltd.
1270 Aberdeen Street
Hawkesbury, ON K6A 1K7
Tel: 613 632 9577
Fax: 613 632 1053

PURCHASE ORDER

Purchase Order ID PO27040

Purchase Order Date 1/13/2015

PO Print Date 1/13/2015

Page Number 1 of 3

Order From :

VC-MET004

Ship To : DART AEROSPACE LTD

METCOR INC.
560 BOUL. ARTHUR SAUVE
SAINT-EUSTACHE, QC J7R 5A8
CA

1270 ABERDEEN
HAWKESBURY, ON K6A 1K7
CANADA

Contact Name

Vendor Phone 450 473 1884

Ship To Contact

Ship To Phone

Ship Via: FedEx Overnight collect

Ship Acct:

Buyer

Chantal Lavoie

Customer POID

Customer Tax # 10127-2607

Terms Net 30

Currency CAD

FOB FCA - (Free Carrier)

Line Nbr	Reference Vendor Part Number Line Comments Delivery Comments	Description/ Mfg ID	Req Date/ Taxable Promise Date	CD	Req Qty/ Unit of Measure	PO Unit Price	Extended Price
1	127805	646.3013 BLADE	1/23/2015 Yes 1/23/2015		12.00 ✓	\$0.00	\$0.00
	FINISH: HEAT TREAT TO 58-62 RC ROCKWELL HARDNESS						
	PART ARE MADE FROM AISI A2 TOOL STEEL						
	PLEASE NOTE: DETAIL C OF C REQUIRED						
	Line Total:						\$0.00
2	127669	646.3314 BLADE	1/23/2015 Yes 1/23/2015		12.00	\$0.00	\$0.00
	FINISH: HEAT TREAT TO 58-62 RC ROCKWELL HARDNESS						
	PART ARE MADE FROM AISI A2 TOOL STEEL						
	PLEASE NOTE: DETAIL C OF C REQUIRED						

8015-01-26

Note:

1/13/2015

METCOR INC.

660 BOUL. ANTHUR SAUVÉ
 ST-EUSTACHE, QC J1B 5A8
 Tel: 450-473-1884 / Fax: 450-481-5408

Reçu de livraison

Delivery Receipt

BON DE TRAVAIL Order	EXPÉDITEUR Shipper ID	BON D'EXPÉDITION Shipper
201869	1	87675

EXPÉDITION COMPLETE / Shipped Complete

CLIENT / Customer 215

DART AEROSPACE

1270 ABERDEEN
 HAWKESBURY, ON K6A 1K7
 Ph: 613-632-5200
 Fax: 613-632-1053

LIVRE À / Shipped To**DART AEROSPACE**

1270 ABERDEEN
 HAWKESBURY, ON K6A 1K7
 Ph: 613-632-5200
 Fax: 613-632-1053



COMMANDE DU CLIENT Customer PO	BON DE LIVRAISON DU CLIENT Customer Shipped No.	TYPE DE MATÉRIEL Material Type	DATE DE LA COMMANDE Order Date	TRANSPORTEUR Carrier
27040		A2	2015/1/13	client

QUANTITÉ Quantity	No. PIÈCE Part No.	NOM DE LA PIÈCE Part Name	DESCRIPTION DE LA PIÈCE Part Description	POIDS Weight
----------------------	-----------------------	------------------------------	---	-----------------

74 646 3316

23,

(10) 646 3316 127482

(30) 646 9711 128097

(10) 646 9711 127326

(12) 646 3013 127805

(12) 646 3314 127069

2015-01-26

2-BOÎTE DE CARTON

TYPE DE CONTENEUR Container Type	# DE CONTENEURS # Of Containers	COMMENTAIRES CONTENEUR Container Comments
BOÎTE DE CARTON	2	

CERTIFICAT

EMPAQUETAGE Packing	
------------------------	--

QUANTITÉ EXPÉDIÉE / Quantity Shipped 74

POIDS EXPÉDIÉ / Weight Shipped 23,00

QUANTITÉ RESTANTE / Quantity Remaining 0

POIDS RESTANT / Weight Remaining 0,00

CERTIFICAT

QUANTITÉ EXPÉDIÉE / Quantity Shipped	74
POIDS EXPÉDIÉ / Weight Shipped	23,00

Signature:

Date:

EXPÉDIÉ À / Shipped On 2015/01/16

METCOR INC.

560 BOUL. ARTHUR-SAUVÉ, ST-EUSTACHE, QC, J7R 5A8

Tél.: 450-473-1884

Télécopieur / Fax administration: 450-491-5498

Télécopieur / Fax production: 450 491-6454

Rapport d'Inspection

Inspection Report

BON DE TRAVAIL order	CHARGÉ (date)
201869	

CLIENT / customer 215

DART AEROSPACE

1270 ABERDEEN

HAWKESBURY

ON K6A 1K7

LIVRÉ À / shipped to:

DART AEROSPACE

1270 ABERDEEN

HAWKESBURY

ON K6A 1K7

COMMANDE DU CLIENT customer po	BON DE LIVRAISON DU CLIENT customer shipper no.	MATÉRIEL material	MAÎTRE D'OEUVRE prime contractor	PROG
27040		A2		

SPÉCIFICATIONS DU PROCÉDÉ

processing specifications

VAC HARDEN

HARDEN AND TEMPER

EXIGENCE / requirement	SPÉCIFICATIONS / specified	TESTS EXÉCUTÉS / performed	RÉSULTATS DE TESTS
HARDNESS	58 - 62 HRC	8	60 - 62 HRC

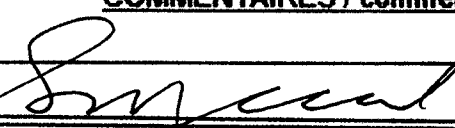
QUANTITÉ quantity	POIDS weight	DESCRIPTION DES PIÈCES parts description
74	23	646.3316 (10) 646.3316 127462 (30) 646.9711 128087 (10) 646.9711 127326 (12) 646.3013 127805 ✓ (12) 646.3314 127669 2 BOITE DE CARTON

SP15-01-26

26 Jan

COMMENTAIRES / comments

APPROUVÉ par / Approved by:



DATE: 2015-01-16

METCOR INC.

560 BOUL. ARTHUR-SAUVÉ, ST-EUSTACHE, QC, J7R 5A8

Tél.: 450-473-1884

Télécopieur / Fax administration: 450-491-5498

Télécopieur / Fax production: 450 491-6454

Certificat de Conformité Détail

Detailed Certificate of Compliance

BON DE TRAVAIL order	CHARGEMENT load
201869	1

CLIENT / customer 215

DART AEROSPACE

1270 ABERDEEN

HAWKESBURY

ON K6A 1K7

LIVRÉ À / shipped to:

DART AEROSPACE

1270 ABERDEEN

HAWKESBURY

ON K6A 1K7

1

COMMANDE DU CLIENT customer po	BON DE LIVRAISON DU CLIENT customer shipper no.	MATÉRIEL material	MAÎTRE D'OEUVRE prime contractor	PROGRAM
27040		A2		
SPECIFICATIONS DU PROCÉDÉ processing specifications				
VAC HARDEN				
HARDEN AND TEMPER				
EXIGENCE / requirement	SPECIFICATIONS / specified		TESTS EXÉCUTÉS / performed	RÉSULTATS DE TESTS / results
HARDNESS	58 - 62 HRC		8	60 - 62 HRC
QUANTITÉ quantity	POIDS weight	DESCRIPTION DES PIÈCES parts description		
74	23	646.3316 (10) 646.3316 127462 (30) 646.9711 128097 (10) 646.9711 127326 (12) 646.3013 127805 (12) 646.3314 127669 2 BOITE DE CARTON		

COMMENTAIRES / comments

DOUBLE TEMPER 400F, 2 HRS

Le traitement thermique (TT) a été fait en utilisant des équipements en conformité avec la spécification demandée. Toutes les opérations de TT ont été faites en conformité avec les requis de la spécification demandée et toutes les vérifications et les tests demandés ont été faites et documentés. Aucun changement n'a été faite par rapport au TT. On certifie que le matériel a été fabriqué, échantillonné, testé et inspecté en accord avec les spécifications du matériel et le bon de commande et le matériel rencontre les exigences spécifiées.

Heat treatment (HT) was performed with equipment that meets the requirements of requested specification. All HT operations were performed in compliance with the required HT specification and all verifications have been performed and documented. No unauthorized changes were performed in regards to the HT. We certify that the material was manufactured, sampled, tested and inspected in accordance with the material specification and the purchase order and was found to meet the requirements.

APPROUVÉ par / Approved by:

Isabel Otero

Isabel Otero
QA Technician

DATE: 2015-01-16

